



SEQUENCE LISTING

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<120> NUCLEIC ACID ENCODING DS-CAM PROTEINS AND PRODUCTS
RELATED THERETO

<130> 9002-006

<140> 08/956,991

<141> 1997-10-23

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<160> 11

<170> PatentIn Ver. 2.0

<210> 1

<211> 6604

<212> DNA

<213> HUMAN

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<221> CDS

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Ala Leu Gly His Pro Glu Pro Asp Tyr Arg Trp Leu Lys Asp Asn Met	
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Pro Leu Glu Leu Ser Gly Arg Phe Gln Lys Thr Val Thr Gly Leu Leu	
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Asp Thr Tyr Ile His Cys Arg Val Ile Gly Tyr Pro Tyr Tyr Ser Ile	
520 525 530 535	
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Lys Trp Tyr Lys Asn Ser Asn Leu Leu Pro Phe Asn His Arg Gln Val	
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 650 655 660

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 Asn Gly Asn Tyr Thr Cys Ile Ala Arg Asn Glu Ala Ala Ala Val Glu
 665 670 675

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 700 705 710

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 745 750 755

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Ser Cys Thr Ala His Gly Glu Lys Pro Ile Ile Val Arg Trp Glu Lys	
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Glu Asp Arg Ile Ile Asn Pro Glu Met Ala Arg Tyr Leu Val Ser Thr	
825	830 835
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920	925 930 935
aaa gat gtt tcc cct cag ctg aac tcg gcc acc atc att gat atc cac	3305
Lys Asp Val Ser Pro Gln Leu Asn Ser Ala Thr Ile Ile Asp Ile His	
940	945 950
cct tcc tcc acc tac agc atc cgc atg tac gcc aag aac cgg att ggc	3353
Pro Ser Ser Thr Tyr Ser Ile Arg Met Tyr Ala Lys Asn Arg Ile Gly	
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Lys Ser Glu Pro Ser Asn Glu Leu Thr Ile Thr Ala Asp Glu Ala Ala	
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Ser Ile Arg Val Thr Trp Lys Ala Pro Lys Lys His Leu Gln Asn Gly	
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Val Tyr Thr Leu Asp Asn Leu Asn Lys Phe Thr Gln Tyr Gly Leu Val	
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Leu Ser Lys Glu Ala Leu Asn Gly Ile Leu Gln Gly Phe Arg Val Ile	
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Tyr Trp Ala Asn Leu Met Asp Gly Glu Leu Gly Glu Ile Lys Asn Ile	
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Pro Ala Gly Val Lys Ala Ala Ala Ala Ser Ala Ser Met Val Phe Val	
1195 1200 1205	
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Glu Ile Ile Glu Ala Lys Thr Leu Gly Lys Glu Pro Gln Phe Ser Lys	
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gag cag gag ctg ttt gcc agc atc aac acc aca cgc gtg agg ctg aac	4937
Glu Gln Glu Leu Phe Ala Ser Ile Asn Thr Thr Arg Val Arg Leu Asn	
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Leu Ile Gly Trp Asn Asp Gly Gly Cys Pro Ile Thr Ser Phe Thr Leu	
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Gly Leu Lys Met Leu Val Thr Ile Ser Cys Ile Leu Val Gly Val Leu	
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Ser Lys Asn Thr Arg Thr Ser Asp Thr Leu Ser Lys Gln Gln Gln Thr	
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Arg Asp Thr Met Glu Thr Ile Asp Asp Arg Ser Thr Val Leu Leu Thr	
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Leu Asn Arg Pro His Pro Thr Ile Ser Ala His Thr Leu Thr Thr Asp
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Trp Arg Leu Pro Thr Pro Arg Ala Ala Gly Ser Val Asp Lys Glu Ser
1770 1775 1780

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Asp Ser Tyr Ser Val Ser Pro Ser Gln Asp Thr Asp Arg Ala Arg Ser
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Ser Met Val Ser Thr Glu Ser Ala Ser Ser Thr Tyr Glu Glu Leu Ala
1800 1805 1810 1815

agg gcc tac gaa cac gcc aag atg gaa gag caa ctg agg cac gcc aag 5945
Arg Ala Tyr Glu His Ala Lys Met Glu Glu Gln Leu Arg His Ala Lys
1820 1825 1830

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Phe Thr Ile Thr Glu Cys Phe Ile Ser Asp Thr Ser Ser Glu Gln Leu
1835 1840 1845

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1850 1855 1860

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Ser Glu Ser Gly Ile Cys Arg Phe Thr Ala Ser Pro Pro Lys Pro Gln
1865 1870 1875

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1880 1885 1890 1895

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Val Thr Ser Tyr Ile Cys Leu His Thr Leu Glu Trp Thr Phe Cys
1900 1905 1910

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 Glu Val Val Phe Ala Ser Thr Thr Gly Thr Leu Val Pro Cys Pro Ala
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 Ala Gly Ile Pro Pro Val Thr Leu Arg Trp Tyr Leu Ala Thr Gly Glu
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 Glu Ile Tyr Asp Val Pro Gly Ile Arg His Val His Pro Asn Gly Thr
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 Leu Gln Ile Phe Pro Phe Pro Pro Ser Ser Phe Ser Thr Leu Ile His
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 Asp Asn Thr Tyr Tyr Cys Thr Ala Glu Asn Pro Ser Gly Lys Ile Arg
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 Ser Gln Asp Val His Ile Lys Ala Val Leu Arg Glu Pro Tyr Thr Val
 115 120 125
 Arg Val Glu Asp Gln Lys Thr Met Arg Gly Asn Val Ala Val Phe Lys
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 Cys Ile Ile Pro Ser Ser Val Glu Ala Tyr Ile Thr Val Val Ser Trp
 145 150 155 160

Glu Lys Asp Thr Val Ser Leu Val Ser Gly Ser Arg Phe Leu Ile Thr
 165 170 175
 Ser Thr Gly Ala Leu Tyr Ile Lys Asp Val Gln Asn Glu Asp Gly Leu
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 Tyr Asn Tyr Arg Cys Ile Thr Arg His Arg Tyr Thr Gly Glu Thr Arg
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 Gln Ser Asn Ser Ala Arg Leu Phe Val Ser Asp Pro Ala Asn Ser Ala
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 Pro Ser Ile Leu Asp Gly Phe Asp His Arg Lys Ala Met Ala Gly Gln
 225 230 235 240
 Arg Val Glu Leu Pro Cys Lys Ala Leu Gly His Pro Glu Pro Asp Tyr
 245 250 255
 Arg Trp Leu Lys Asp Asn Met Pro Leu Glu Leu Ser Gly Arg Phe Gln
 260 265 270
 Lys Thr Val Thr Gly Leu Leu Ile Glu Asn Ile Arg Pro Ser Asp Ser
 275 280 285
 Gly Ser Tyr Val Cys Glu Val Ser Asn Arg Tyr Gly Thr Ala Lys Val
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 Ile Gly Arg Leu Tyr Val Lys Gln Pro Leu Lys Ala Thr Ile Ser Pro
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 Arg Lys Val Lys Ser Ser Val Gly Ser Gln Val Ser Leu Ser Cys Ser
 325 330 335
 Val Thr Gly Thr Glu Asp Gln Glu Leu Ser Trp Tyr Arg Asn Gly Glu
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 Ile Leu Asn Pro Gly Lys Asn Val Arg Ile Thr Gly Ile Asn His Glu
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 Asn Leu Ile Met Asp His Met Val Lys Ser Asp Gly Gly Ala Tyr Gln
 370 375 380
 Cys Phe Val Arg Lys Asp Lys Leu Ser Ala Gln Asp Tyr Val Gln Val
 385 390 395 400
 Val Leu Glu Asp Gly Thr Pro Lys Ile Ile Ser Ala Phe Ser Glu Lys
 405 410 415

Val Val Ser Pro Ala Glu Pro Val Ser Leu Met Cys Asn Val Lys Gly
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 Thr Pro Leu Pro Thr Ile Thr Trp Thr Leu Asp Asp Asp Pro Ile Leu
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 Lys Gly Gly Ser His Arg Ile Ser Gln Met Ile Thr Ser Glu Gly Asn
 450 455 460
 Val Val Ser Tyr Leu Asn Ile Ser Ser Ser Gln Val Arg Asp Gly Gly
 465 470 475 480
 Val Tyr Arg Cys Thr Ala Asn Asn Ser Ala Gly Val Val Leu Tyr Gln
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 Ala Arg Ile Asn Val Arg Gly Pro Ala Ser Ile Arg Pro Met Lys Asn
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 Ile Thr Ala Ile Ala Gly Arg Asp Thr Tyr Ile His Cys Arg Val Ile
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 Gly Tyr Pro Tyr Tyr Ser Ile Lys Trp Tyr Lys Asn Ser Asn Leu Leu
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 Pro Phe Asn His Arg Gln Val Ala Phe Glu Asn Asn Gly Thr Leu Lys
 545 550 555 560
 Leu Ser Asp Val Gln Lys Glu Val Asp Glu Gly Glu Tyr Thr Cys Asn
 565 570 575
 Val Leu Val Gln Pro Gln Leu Ser Thr Ser Gln Ser Val His Val Thr
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 Val Lys Val Pro Pro Phe Ile Gln Pro Phe Glu Phe Pro Arg Phe Ser
 595 600 605
 Ile Gly Gln Arg Val Phe Ile Pro Cys Val Val Val Ser Gly Asp Leu
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 Pro Ile Thr Ile Thr Trp Gln Lys Asp Gly Arg Pro Ile Pro Gly Ser
 625 630 635 640
 Leu Gly Val Thr Ile Asp Asn Ile Asp Phe Thr Ser Ser Leu Arg Ile
 645 650 655
 Ser Asn Leu Ser Leu Met His Asn Gly Asn Tyr Thr Cys Ile Ala Arg
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Asn Glu Ala Ala Ala Val Glu His Gln Ser Gln Leu Ile Val Arg Val
 675 680 685

Pro Pro Lys Phe Val Val Gln Pro Arg Asp Gln Asp Gly Ile Tyr Gly
 690 695 700

Lys Ala Val Ile Leu Asn Cys Ser Ala Glu Gly Tyr Pro Val Pro Thr
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Ile Val Trp Lys Phe Ser Lys Gly Ala Gly Val Pro Gln Phe Gln Pro
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Ile Ala Leu Asn Gly Arg Ile Gln Val Leu Ser Asn Gly Ser Leu Leu
 740 745 750

Ile Lys His Val Val Glu Glu Asp Ser Gly Tyr Tyr Leu Cys Lys Val
 755 760 765

Ser Asn Asp Val Gly Ala Asp Val Ser Lys Ser Met Tyr Leu Thr Val
 770 775 780

Lys Ile Pro Ala Met Ile Thr Ser Tyr Pro Asn Thr Thr Leu Ala Thr
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Gln Gly Gln Lys Lys Glu Met Ser Cys Thr Ala His Gly Glu Lys Pro
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Ile Ile Val Arg Trp Glu Lys Glu Asp Arg Ile Ile Asn Pro Glu Met
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Ala Arg Tyr Leu Val Ser Thr Lys Glu Val Gly Glu Glu Val Ile Ser
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Thr Leu Gln Ile Leu Pro Thr Val Arg Glu Asp Ser Gly Phe Phe Ser
 850 855 860

Cys His Ala Ile Asn Ser Tyr Gly Glu Asp Arg Gly Ile Ile Gln Leu
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Thr Val Gln Glu Pro Pro Asp Pro Pro Glu Ile Glu Ile Lys Asp Val
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Lys Ala Arg Thr Ile Thr Leu Arg Trp Thr Met Gly Phe Asp Gly Asn
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 Leu Glu Pro Ile Ser Ser Gln Ser Ile Arg Val Thr Trp Lys Ala Pro
 995 1000 1005
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 1090 1095 1100
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 Asp Gly Leu Glu Lys Tyr Thr Asn Tyr Ser Ile Gln Val Leu Ala Phe
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 1170 1175 1180

Lys Glu Asp Val Pro Gly Pro Pro Ala Gly Val Lys Ala Ala Ala Ala
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Ser Ala Ser Met Val Phe Val Ser Trp Leu Pro Pro Leu Lys Leu Asn
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Gly Ile Ile Arg Lys Tyr Thr Val Phe Cys Ser His Pro Tyr Pro Thr
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Val Ile Ser Glu Phe Glu Ala Ser Pro Asp Ser Phe Ser Tyr Arg Ile
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Thr Pro Trp Met Lys Asp Ile Val Leu Pro Cys Lys Ala Val Gly Asp
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Pro Ser Pro Ala Val Lys Trp Met Lys Asp Ser Asn Gly Thr Pro Ser
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Gln Val Pro Pro Asp Gln Pro Arg Leu Thr Val Ser Lys Thr Thr Ser
 1380 1385 1390

Ser Ser Ile Thr Leu Ser Trp Leu Pro Gly Asp Asn Gly Gly Ser Ser
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Gly Ser Phe Pro Ile Ser Pro Ser Glu Arg Ser Tyr Arg Leu Glu Asn
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 1685 1690 1695

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 745 1750 1755 1760
 Ala His Thr Leu Thr Thr Asp Trp Arg Leu Pro Thr Pro Arg Ala Ala
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 Gly Ser Val Asp Lys Glu Ser Asp Ser Tyr Ser Val Ser Pro Ser Gln
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 Asp Thr Asp Arg Ala Arg Ser Ser Met Val Ser Thr Glu Ser Ala Ser
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 Ser Thr Tyr Glu Glu Leu Ala Arg Ala Tyr Glu His Ala Lys Met Glu
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 825 1830 1835 1840
 Asp Thr Ser Ser Glu Gln Leu Thr Ala Gly Thr Asn Glu Tyr Thr Asp
 1845 1850 1855
 Ser Leu Thr Ser Ser Thr Pro Ser Glu Ser Gly Ile Cys Arg Phe Thr
 1860 1865 1870
 Ala Ser Pro Pro Lys Pro Gln Asp Gly Gly Arg Val Met Asn Met Ala
 1875 1880 1885
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 1890 1895 1900
 Leu Glu Trp Thr Phe Cys
 905 1910

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<212> DNA

<213> Artificial Sequence

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caccaggata caggagatgg tcaccagcat cttgagcccc tcgttggtcg tcagcccttc 180
ttcgtttttg acaactgact taatgagtgg aggaattgta ctgccatcgt agttcagcgt 240
agcgaagttg gcctgcttct ccgcgcagcc cgcactgttg cacacccgca tctgcagctc 300
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agctgtggtc caaactgtgg tcccaaag 388

<210> 4

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:MboI linker
sequence

<400> 4

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<210> 5

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:primer

<400> 5

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<210> 6

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:primer

<400> 6

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<210> 7

<211> 842

<212> DNA

<213> MOUSE

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tctccttggt ccagagcttc gcgaatgttt tcagtgaaga gcccactcc agcctctact 180
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agacgagaca gagcaactgc gcgagactgt tcgtgtcaga accagcaaac tcagcccatc 780
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842

<210> 8

<211> 898

<212> DNA

<213> MOUSE

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gcgtagatat cacttctct cccacctct tgggtggatac agtacggggc actttcaggg 720
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ctcattcctt cctttgacct tgatggccag gtggtgtggg tataagttat atcatggccg 840
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<210> 9

<211> 2173

<212> DNA

<213> MOUSE

<400> 9

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ggccagtggc tttccatctg gattccaggc caagctaaaa atctgttct gatggccctg 180
cagtttcagc cgttcagctc cagtctgaag ttccagatg cgaacgggta gatcatagga 240

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Leu Tyr Phe Val Asn Ala Ser Leu Gln Glu Val Val Phe Ala Ser Thr	
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acg ggg act ctg gtg ccc tgc ccc gca gca ggc atc cct cct gtg act	617
Thr Gly Thr Leu Val Pro Cys Pro Ala Ala Gly Ile Pro Pro Val Thr	
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Leu Arg Trp Tyr Leu Ala Thr Gly Glu Glu Ile Tyr Asp Val Pro Gly	
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Ile Arg His Val His Pro Asn Gly Thr Leu Gln Ile Phe Pro Phe Pro	
75 80 85	
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Pro Ser Ser Phe Ser Thr Leu Ile His Asp Asn Thr Tyr Tyr Cys Thr	
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gct gaa aat cct tca ggg aaa att aga agt cag gat gtc cac atc aag	809
Ala Glu Asn Pro Ser Gly Lys Ile Arg Ser Gln Asp Val His Ile Lys	
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Ala Val Leu Arg Glu Pro Tyr Thr Val Arg Val Glu Asp Gln Lys Thr	
120 125 130 135	
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Met Arg Gly Asn Val Ala Val Phe Lys Cys Ile Ile Pro Ser Ser Val	
140 145 150	
gag gcg tac atc act gtc gtc tca tgg gag aaa gac act gtt tca ctt	953
Glu Ala Tyr Ile Thr Val Val Ser Trp Glu Lys Asp Thr Val Ser Leu	
155 160 165	
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Val Ser Gly Ser Arg Phe Leu Ile Thr Ser Thr Gly Ala Leu Tyr Ile	
170 175 180	
aaa gat gta cag aat gaa gat gga ttg tat aac tac cgc tgc atc acg	1049
Lys Asp Val Gln Asn Glu Asp Gly Leu Tyr Asn Tyr Arg Cys Ile Thr	
185 190 195	
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Arg His Arg Tyr Thr Gly Glu Thr Arg Gln Ser Asn Ser Ala Arg Leu	
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205	210
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Phe Val Ser Asp Pro Ala Asn Ser Ala Pro Ser Ile Leu Asp Gly Phe	
220	230
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gac cat cgc aaa gcc atg gct ggg cag cgt gtg gag ctg cct tgc aaa	1193
Asp His Arg Lys Ala Met Ala Gly Gln Arg Val Glu Leu Pro Cys Lys	
235	245
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gcg ctc ggg cac cct gag cca gat tac cgc tgg ctg aag gac aac atg	1241
Ala Leu Gly His Pro Glu Pro Asp Tyr Arg Trp Leu Lys Asp Asn Met	
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ccc ctg gaa ctt tca ggg agg ttc cag aag acc gtg acg ggg ctg ctc	1289
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Ile Glu Asn Ile Arg Pro Ser Asp Ser Gly Ser Tyr Val Cys Glu Val	
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Ser Asn Arg Tyr Gly Thr Ala Lys Val Ile Gly Arg Leu Tyr Val Lys	
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Gln Pro Leu Lys Ala Thr Ile Ser Pro Arg Lys Val Lys Ser Ser Val	
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Val Arg Ile Thr Gly Ile Asn His Glu Asn Leu Ile Met Asp His Met	
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Val Lys Ser Asp Gly Gly Ala Tyr Gln Cys Phe Val Arg Lys Asp Lys	
380	390
385	
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Leu Ser Ala Gln Asp Tyr Val Gln Val Val Leu Glu Asp Gly Thr Pro	
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aaa att att tct gcc ttt agt gaa aag gtg gtg agt cca gca gag ccg	1721
Lys Ile Ile Ser Ala Phe Ser Glu Lys Val Val Ser Pro Ala Glu Pro	
410 415 420	
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Val Ser Leu Met Cys Asn Val Lys Gly Thr Pro Leu Pro Thr Ile Thr	
425 430 435	
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Trp Thr Leu Asp Asp Asp Pro Ile Leu Lys Gly Gly Ser His Arg Ile	
440 445 450 455	
agc cag atg atc acg tcg gag ggg aac gtg gtc agc tac ctg aac atc	1865
Ser Gln Met Ile Thr Ser Glu Gly Asn Val Val Ser Tyr Leu Asn Ile	
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Ser Ser Ser Gln Val Arg Asp Gly Gly Val Tyr Arg Cys Thr Ala Asn	
475 480 485	
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Asn Ser Ala Gly Val Val Leu Tyr Gln Ala Arg Ile Asn Val Arg Gly	
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cct gca agc att cga cca atg aaa aac atc aca gca ata gca gga cgg	2009
Pro Ala Ser Ile Arg Pro Met Lys Asn Ile Thr Ala Ile Ala Gly Arg	
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Asp Thr Tyr Ile His Cys Arg Val Ile Gly Tyr Pro Tyr Tyr Ser Ile	
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Lys Trp Tyr Lys Asn Ser Asn Leu Leu Pro Phe Asn His Arg Gln Val	
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Ala Phe Glu Asn Asn Gly Thr Leu Lys Leu Ser Asp Val Gln Lys Glu	
555 560 565	
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Val Asp Glu Gly Glu Tyr Thr Cys Asn Val Leu Val Gln Pro Gln Leu	
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Ser Thr Ser Gln Ser Val His Val Thr Val Lys Val Pro Pro Phe Ile	
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Gln Pro Phe Glu Phe Pro Arg Phe Ser Ile Gly Gln Arg Val Phe Ile	
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ccc tgt gtt gtg gtc tca ggg gac tta ccc atc acg atc acc tgg cag	2345
Pro Cys Val Val Val Ser Gly Asp Leu Pro Ile Thr Ile Thr Trp Gln	
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Lys Asp Gly Arg Pro Ile Pro Gly Ser Leu Gly Val Thr Ile Asp Asn	
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Ile Asp Phe Thr Ser Ser Leu Arg Ile Ser Asn Leu Ser Leu Met His	
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Asn Gly Asn Tyr Thr Cys Ile Ala Arg Asn Glu Ala Ala Ala Val Glu	
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His Gln Ser Gln Leu Ile Val Arg Val Pro Pro Lys Phe Val Val Gln	
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Pro Arg Asp Gln Asp Gly Ile Tyr Gly Lys Ala Val Ile Leu Asn Cys	
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Ser Ala Glu Gly Tyr Pro Val Pro Thr Ile Val Trp Lys Phe Ser Lys	
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Gly Ala Gly Val Pro Gln Phe Gln Pro Ile Ala Leu Asn Gly Arg Ile	
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Gln Val Leu Ser Asn Gly Ser Leu Leu Ile Lys His Val Val Glu Glu	
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Asp Ser Gly Tyr Tyr Leu Cys Lys Val Ser Asn Asp Val Gly Ala Asp	
760	765 770 775
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Val Ser Lys Ser Met Tyr Leu Thr Val Lys Ile Pro Ala Met Ile Thr	
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Ser Tyr Pro Asn Thr Thr Leu Ala Thr Gln Gly Gln Lys Lys Glu Met	
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Glu Asp Arg Ile Ile Asn Pro Glu Met Ala Arg Tyr Leu Val Ser Thr	
825	830 835
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Lys Glu Val Gly Glu Glu Val Ile Ser Thr Leu Gln Ile Leu Pro Thr	
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Pro Pro Glu Ile Glu Ile Lys Asp Val Lys Ala Arg Thr Ile Thr Leu	
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Lys Asp Val Ser Pro Gln Leu Asn Ser Ala Thr Ile Ile Asp Ile His	
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Pro Ser Ser Thr Tyr Ser Ile Arg Met Tyr Ala Lys Asn Arg Ile Gly	
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Lys Ser Glu Pro Ser Asn Glu Leu Thr Ile Thr Ala Asp Glu Ala Ala	
970 975 980	
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Ser Ile Arg Val Thr Trp Lys Ala Pro Lys Lys His Leu Gln Asn Gly	
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att atc cgt ggc tac caa ata ggt tac cga gag tac agc act ggg ggt	3545
Ile Ile Arg Gly Tyr Gln Ile Gly Tyr Arg Glu Tyr Ser Thr Gly Gly	
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Asn Phe Gln Phe Asn Ile Ile Ser Val Asp Thr Ser Gly Asp Ser Glu	
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Val Tyr Thr Leu Asp Asn Leu Asn Lys Phe Thr Gln Tyr Gly Leu Val	
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Val Gln Ala Cys Asn Arg Ala Gly Thr Gly Pro Ser Ser Gln Glu Ile	
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1080 1085 1090 1095	
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Gln Ala Ile Ala Thr Ser Pro Glu Ser Ile Ser Ile Ser Trp Ser Thr	
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Leu Ser Lys Glu Ala Leu Asn Gly Ile Leu Gln Gly Phe Arg Val Ile	
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Val Phe Cys Ser His Pro Tyr Pro Thr Val Ile Ser Glu Phe Glu Ala	
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Leu Pro Gly Asp Asn Gly Gly Ser Ser Ile Arg Gly Tyr Ile Leu Gln	
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Glu Val Val Phe Ala Ser Thr Thr Gly Thr Leu Val Pro Cys Pro Ala
35 40 45
Ala Gly Ile Pro Pro Val Thr Leu Arg Trp Tyr Leu Ala Thr Gly Glu
50 55 60
Glu Ile Tyr Asp Val Pro Gly Ile Arg His Val His Pro Asn Gly Thr
65 70 75 80
Leu Gln Ile Phe Pro Phe Pro Pro Ser Ser Phe Ser Thr Leu Ile His
85 90 95
Asp Asn Thr Tyr Tyr Cys Thr Ala Glu Asn Pro Ser Gly Lys Ile Arg
100 105 110
Ser Gln Asp Val His Ile Lys Ala Val Leu Arg Glu Pro Tyr Thr Val
115 120 125
Arg Val Glu Asp Gln Lys Thr Met Arg Gly Asn Val Ala Val Phe Lys
130 135 140
Cys Ile Ile Pro Ser Ser Val Glu Ala Tyr Ile Thr Val Val Ser Trp
145 150 155 160
Glu Lys Asp Thr Val Ser Leu Val Ser Gly Ser Arg Phe Leu Ile Thr
165 170 175
Ser Thr Gly Ala Leu Tyr Ile Lys Asp Val Gln Asn Glu Asp Gly Leu
180 185 190
Tyr Asn Tyr Arg Cys Ile Thr Arg His Arg Tyr Thr Gly Glu Thr Arg
195 200 205
Gln Ser Asn Ser Ala Arg Leu Phe Val Ser Asp Pro Ala Asn Ser Ala

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Pro Ser Ile Leu Asp Gly Phe Asp His Arg Lys Ala Met Ala Gly Gln		
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Arg Val Glu Leu Pro Cys Lys Ala Leu Gly His Pro Glu Pro Asp Tyr		
245	250	255
Arg Trp Leu Lys Asp Asn Met Pro Leu Glu Leu Ser Gly Arg Phe Gln		
260	265	270
Lys Thr Val Thr Gly Leu Leu Ile Glu Asn Ile Arg Pro Ser Asp Ser		
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Gly Ser Tyr Val Cys Glu Val Ser Asn Arg Tyr Gly Thr Ala Lys Val		
290	295	300
Ile Gly Arg Leu Tyr Val Lys Gln Pro Leu Lys Ala Thr Ile Ser Pro		
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Arg Lys Val Lys Ser Ser Val Gly Ser Gln Val Ser Leu Ser Cys Ser		
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Val Thr Gly Thr Glu Asp Gln Glu Leu Ser Trp Tyr Arg Asn Gly Glu		
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Ile Leu Asn Pro Gly Lys Asn Val Arg Ile Thr Gly Ile Asn His Glu		
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Asn Leu Ile Met Asp His Met Val Lys Ser Asp Gly Gly Ala Tyr Gln		
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Cys Phe Val Arg Lys Asp Lys Leu Ser Ala Gln Asp Tyr Val Gln Val		
385	390	395 400
Val Leu Glu Asp Gly Thr Pro Lys Ile Ile Ser Ala Phe Ser Glu Lys		
405	410	415
Val Val Ser Pro Ala Glu Pro Val Ser Leu Met Cys Asn Val Lys Gly		
420	425	430
Thr Pro Leu Pro Thr Ile Thr Trp Thr Leu Asp Asp Asp Pro Ile Leu		
435	440	445
Lys Gly Gly Ser His Arg Ile Ser Gln Met Ile Thr Ser Glu Gly Asn		
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Val Val Ser Tyr Leu Asn Ile Ser Ser Ser Gln Val Arg Asp Gly Gly		

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Ala Arg Ile Asn Val Arg Gly Pro Ala Ser Ile Arg Pro Met Lys Asn			
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Ile Thr Ala Ile Ala Gly Arg Asp Thr Tyr Ile His Cys Arg Val Ile			
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Gly Tyr Pro Tyr Tyr Ser Ile Lys Trp Tyr Lys Asn Ser Asn Leu Leu			
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Pro Phe Asn His Arg Gln Val Ala Phe Glu Asn Asn Gly Thr Leu Lys			
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Pro Ile Thr Ile Thr Trp Gln Lys Asp Gly Arg Pro Ile Pro Gly Ser			
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Leu Gly Val Thr Ile Asp Asn Ile Asp Phe Thr Ser Ser Leu Arg Ile			
	645	650	655
Ser Asn Leu Ser Leu Met His Asn Gly Asn Tyr Thr Cys Ile Ala Arg			
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Asn Glu Ala Ala Ala Val Glu His Gln Ser Gln Leu Ile Val Arg Val			
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Pro Pro Lys Phe Val Val Gln Pro Arg Asp Gln Asp Gly Ile Tyr Gly			
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850	855	860
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Lys Ala Arg Thr Ile Thr Leu Arg Trp Thr Met Gly Phe Asp Gly Asn		
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Ser Pro Ile Thr Gly Tyr Asp Ile Glu Cys Lys Asn Lys Ser Asp Ser		
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Trp Asp Ser Ala Gln Arg Thr Lys Asp Val Ser Pro Gln Leu Asn Ser		
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Ala Thr Ile Ile Asp Ile His Pro Ser Ser Thr Tyr Ser Ile Arg Met		
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Tyr Ala Lys Asn Arg Ile Gly Lys Ser Glu Pro Ser Asn Glu Leu Thr		
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Ile Thr Ala Asp Glu Ala Ala Pro Asp Gly Pro Pro Gln Glu Val His		

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Leu Glu Pro Ile Ser Ser Gln Ser Ile Arg Val Thr Trp Lys Ala Pro		
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Lys Lys His Leu Gln Asn Gly Ile Ile Arg Gly Tyr Gln Ile Gly Tyr		
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Arg Glu Tyr Ser Thr Gly Gly Asn Phe Gln Phe Asn Ile Ile Ser Val		
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Asp Thr Ser Gly Asp Ser Glu Val Tyr Thr Leu Asp Asn Leu Asn Lys		
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Phe Thr Gln Tyr Gly Leu Val Val Gln Ala Cys Asn Arg Ala Gly Thr		
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Gly Pro Ser Ser Gln Glu Ile Ile Thr Thr Thr Leu Glu Asp Val Pro		
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Ile Ile Arg Thr Val Lys Ala Glu Asp Ser Gly Tyr Tyr Ser Cys Ile		
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Ala Asn Asn Asn Trp Gly Ser Asp Glu Ile Ile Leu Asn Leu Gln Val		
1365	1370	1375
Gln Val Pro Pro Asp Gln Pro Arg Leu Thr Val Ser Lys Thr Thr Ser		
1380	1385	1390
Ser Ser Ile Thr Leu Ser Trp Leu Pro Gly Asp Asn Gly Gly Ser Ser		
1395	1400	1405
Ile Arg Gly Tyr Ile Leu Gln Tyr Ser Glu Asp Asn Ser Glu Gln Trp		
1410	1415	1420
Gly Ser Phe Pro Ile Ser Pro Ser Glu Arg Ser Tyr Arg Leu Glu Asn		
425	1430	1435 1440
Leu Lys Cys Gly Thr Trp Tyr Lys Phe Thr Leu Thr Ala Gln Asn Gly		
1445	1450	1455
Val Gly Pro Gly Arg Ile Ser Glu Ile Ile Glu Ala Lys Thr Leu Gly		
1460	1465	1470
Lys Glu Pro Gln Phe Ser Lys Glu Gln Glu Leu Phe Ala Ser Ile Asn		
1475	1480	1485
Thr Thr Arg Val Arg Leu Asn Leu Ile Gly Trp Asn Asp Gly Gly Cys		

1490

1495

1500

Pro Ile Thr Ser Phe Thr Leu Glu Tyr Arg Pro Phe Gly Thr Thr Val
505 1510 1515 1520

Trp Thr Thr Ala Gln Arg Thr Ser Leu Ser Lys Ser Tyr Ile Leu Tyr
1525 1530 1535

Asp Leu Gln Glu Ala Thr Trp Tyr Glu Leu Gln Met Arg Val Cys Asn
1540 1545 1550

Ser Ala Gly Cys Ala Glu Lys Gln Ala Lys Glu Ala Ala Arg Cys Lys
1555 1560 1565

Glu Phe Ser
1570